From: Robert Tregoning RET
To: Richard Bass; WILLIAMSpt@ornl.gov
Date: 11/4/02 9:11AM
Subject: DB uncertainty analysis

Richard/Paul:

I've made a stab at outlining the tasks for the short term uncertainty analyses. Please look at these and let's talk early afternoon today if possible. I've also attached some relevant information for JIc values and the cladding flaw distribution which I sent earlier.

Rob

Rob Tregoning
United States Nuclear Regulatory Commission
Mail Stop T10 E10
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852
Voice: 301-415-6657
Fax: 301-415-5074
E-mail: rlt@nrc.gov

H-42

From: Robert Tregoning, RES
To: Richard Bass; WILLIAMSpt@ornl.gov
Date: 10/29/02 8:59AM
Subject: DB uncertainty analysis

Paul/Richard:

I want to talk to you about this sometime this morning if possible. Please call me at 301-415-6657 before noon.

Rob

From: Robert Tregoning / RES
To: Jeannette Torres
Date: 11/27/02 8:29AM
Subject: Fwd: DB uncertainty analysis

From: Robert Tregoning
To: Richard Bass; WILLIAMSpt@ornl.gov
Date: 11/4/02 9:11AM
Subject: DB uncertainty analysis

Richard/Paul:

I've made a stab at outlining the tasks for the short term uncertainty analyses. Please look at these and let's talk early afternoon today if possible. I've also attached some relevant information for JIc values and the cladding flaw distribution which I sent earlier.

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CLAD THICKNESS =	6.0	MM
WIDTH OF STRIP CLAD BEAD =	20.0	MM
LENGTH OF EXAMINED CLAD BEAD =	225.0	METERS
LENGTH OF BELTLINE CLAD BEAD =	2690.0	METERS

FLAW DEPTH MM	FLAW DEPTH FRAC - BEAD	NUMBER FLAWS	NUMBER FLAWS > A	NUMBER FLAWS > A PER METER OF BEAD EXAMINED CLAD	NUMBER FLAWS > A PER METER OF BEAD BELTLINE CLAD CLAD
0.00	0.000	0.0	1204.0	5.3511E+00	4.4758E-01
0.10	0.017	1200.0	1204.0	5.3511E+00	4.4758E-01
3.00	0.500	3.0	4.0	1.7778E-02	1.4870E-03
4.00	0.667	1.0	1.0	4.4444E-03	3.7175E-04
6	1			5.14286E-05	
				5.3734E+00	
1.20	0.05	10.00			
1.60	0.05	10.00			

0
0.016666667
0.5
0.666666667
1

CDF
0
0.9585E-01
0.3931643007
0.9939E-01
1

COPIED FROM C:\WPTEXT\CLAD FLAW.XLS
LI AND MABE - SS FOR FLAW TYPES S1, S2 AND S3 - ALL FIRST IDENTIFIED BY NDE AND THEN SIZED BY DESTRUCTI
TOTAL LENGTH OF WELD BEAD(CM) 2188.00 CUBIC CM EXAMINED BY DESTRUCTIVE EXAMINATION =
BEAD SIZE (MM) 2.50

TYPE S2 AND S3 DEFECTS ARE TOTAL NUMBER FOR THE 2188 CM OF WELD BEAD (OR 9.5x(2188/57.3) = 363 CM^3 = (
THE PNNL WORK EXAMINTED 0.027 M^3 OF CLAD OR A FACTOR OF 74 GREATER THAN THE LI AND MADE WORK
TYPE S1 DEFECTS ARE NUMBER PER 9.5 CM^2 OF WELD METAL WHICH HAS ESTIMATED (9.5/363)x2188 = 57.3 CM O

ORDERED BY SIZE

FLAW ID	FLAW TYPE	SIZE, MM	# OF SIZE IN 2188 CM OF BEAD	FLAW ID	FLAW TYPE	SIZE, MM	# OF SIZE IN 2188 CM OF BEAD
1	S1	0.508	38.21	1	S1	0.508	38.21
2	S1	0.533	38.21	2	S1	0.533	38.21
3	S1	0.559	38.21	3	S1	0.559	38.21
4	S1	0.559	38.21	4	S1	0.559	38.21
5	S1	0.584	38.21	31	S2	0.559	1.00
6	S1	0.610	38.21	5	S1	0.584	38.21
7	S1	0.610	38.21	6	S1	0.610	38.21
8	S1	0.610	38.21	7	S1	0.610	38.21
9	S1	0.610	38.21	8	S1	0.610	38.21
10	S1	0.610	38.21	9	S1	0.610	38.21
11	S1	0.610	38.21	10	S1	0.610	38.21
12	S1	0.635	38.21	11	S1	0.610	38.21
13	S1	0.635	38.21	12	S1	0.635	38.21
14	S1	0.635	38.21	13	S1	0.635	38.21
15	S1	0.660	38.21	14	S1	0.635	38.21
16	S1	0.660	38.21	32	S2	0.635	1.00
17	S1	0.686	38.21	15	S1	0.660	38.21
18	S1	0.711	38.21	16	S1	0.660	38.21
19	S1	0.711	38.21	17	S1	0.686	38.21
20	S1	0.762	38.21	18	S1	0.711	38.21
21	S1	0.787	38.21	19	S1	0.711	38.21
22	S1	0.889	38.21	20	S1	0.762	38.21
23	S1	0.889	38.21	37	S3	0.762	1.00
24	S1	0.889	38.21	38	S3	0.762	1.00
25	S1	0.965	38.21	21	S1	0.787	38.21
26	S1	0.965	38.21	33	S2	0.813	1.00
27	S1	1.016	38.21	22	S1	0.889	38.21
28	S1	1.016	38.21	23	S1	0.889	38.21
29	S1	1.067	38.21	24	S1	0.889	38.21
30	S1	1.575	38.21	39	S3	0.914	1.00
31	S2	0.559	1.00	40	S3	0.914	1.00

32	S2	0.635	1.00	25	S1	0.965	38.21
33	S2	0.813	1.00	26	S1	0.965	38.21
34	S2	1.041	1.00	27	S1	1.016	38.21
35	S2	1.499	1.00	28	S1	1.016	38.21
36	S2	1.499	1.00	34	S2	1.041	1.00
37	S3	0.762	1.00	29	S1	1.067	38.21
38	S3	0.762	1.00	41	S3	1.422	1.00
39	S3	0.914	1.00	42	S3	1.422	1.00
40	S3	0.914	1.00	35	S2	1.499	1.00
41	S3	1.422	1.00	36	S2	1.499	1.00
42	S3	1.422	1.00	30	S1	1.575	38.21
43	S3	1.803	1	43	S3	1.803	1
44	S3	1.803	1	44	S3	1.803	1
45	S3	2.413	1	45	S3	2.413	1
46	S3	2.413	1	46	S3	2.413	1

COPIED FROM C:\WPTEXT\CLAD FLAW.XLS
DATE = DECEMBER 28, 1999
EQUATIONS 6,7 FROM LI AND MABE - EN82H - FREQUENCIES OF FLAWS PER CUBIC CM

ONE METER LENGTH OF WELD BEAD = 0.24x(2.5x0.24)x100 : 14.4 CUBIC CM
BEAD SIZE (MM) = 2.5

X, MM	X/BEAD	N-DEPTH	# / M OF BEAD
0.100	0.040	5.1882E-01	7.4710E+00
0.200	0.080	2.7668E-01	3.9842E+00
0.300	0.120	1.4755E-01	2.1247E+00
0.400	0.160	7.8685E-02	1.1331E+00
0.500	0.200	4.1962E-02	6.0425E-01
0.600	0.240	2.2378E-02	3.2224E-01
0.700	0.280	1.1934E-02	1.7184E-01
0.800	0.320	6.3640E-03	9.1642E-02
0.900	0.360	3.3938E-03	4.8871E-02
1.000	0.400	1.8099E-03	2.6062E-02
1.100	0.440	9.6518E-04	1.3899E-02
1.200	0.480	5.1471E-04	7.4119E-03
1.300	0.520	2.7449E-04	3.9526E-03
1.400	0.560	1.4638E-04	2.1079E-03
1.500	0.600	7.8063E-05	1.1241E-03
1.600	0.640	4.1630E-05	5.9947E-04
1.700	0.680	2.2200E-05	3.1969E-04
1.800	0.720	1.1839E-05	1.7048E-04
1.900	0.760	6.3136E-06	9.0916E-05
2.000	0.800	3.3670E-06	4.8484E-05

IVE EXAMINATIONS
9.5

0.000363 M^3)

F WELD BEAD

NORMALIZED SIZE	# > SIZE PER M OF BEAD
0.203	5.138E+01
0.213	4.963E+01
0.224	4.788E+01
0.224	4.614E+01
0.224	4.609E+01
0.234	4.434E+01
0.244	4.260E+01
0.244	4.085E+01
0.244	3.911E+01
0.244	3.736E+01
0.244	3.561E+01
0.244	3.387E+01
0.254	3.212E+01
0.254	3.037E+01
0.254	2.863E+01
0.254	2.858E+01
0.264	2.684E+01
0.264	2.509E+01
0.274	2.334E+01
0.284	2.160E+01
0.284	1.985E+01
0.305	1.810E+01
0.305	1.806E+01
0.305	1.801E+01
0.315	1.627E+01
0.325	1.622E+01
0.356	1.447E+01
0.356	1.273E+01
0.356	1.098E+01
0.366	1.094E+01
0.366	1.089E+01

0.386	9.143E+00
0.386	7.397E+00
0.406	5.650E+00
0.406	3.904E+00
0.416	3.858E+00
0.427	2.112E+00
0.569	2.066E+00
0.569	2.021E+00
0.600	1.975E+00
0.600	1.929E+00
0.630	1.828E-01
0.721	1.3711E-01
0.721	9.1408E-02
0.965	4.5704E-02
0.965	0.0000E+00

TABLE 1 SAW SURFACE FLAWS - WITH AND W/O PT

N	DEPTH MM	DEPTH FRACTION OF BEAD	NO PT SURF-I FLAWS PER M OF BEAD DEPTH > A	WITH PT SURF-I FLAWS PER M OF BEAD DEPTH > A
1	1.1	0.208	2.743E-04	5.486E-06
2	3.4	0.623	2.486E-04	4.971E-06
3	5.7	1.038	5.714E-06	1.143E-07
4	8.0	1.453	0.000E+00	0.000E+00
5	10.3	1.869	0.000E+00	0.000E+00
6	12.6	2.284	0.000E+00	0.000E+00
7	14.8	2.699	0.000E+00	0.000E+00
8	17.1	3.114	0.000E+00	0.000E+00
9	19.4	3.530	0.000E+00	0.000E+00
10	21.7	3.945	0.000E+00	0.000E+00

TABLE 2 SAW AND SMAW BURIED FLAWS

N	DEPTH MM	DEPTH FRACTION OF BEAD	SUBMERGED ARC BURIED FLAW FLAWS PER M OF BEAD DEPTH > A	SHIELDED METAL ARC BURIED FLAW FLAWS PER M OF BEAD DEPTH > A
1	1.1	0.208	1.999E-03	9.736E-03
2	3.4	0.623	1.760E-03	8.074E-03
3	5.7	1.038	5.143E-05	1.369E-03
4	8.0	1.453	5.714E-06	3.286E-05
5	10.3	1.869	0.000E+00	0.000E+00
6	12.6	2.284	0.000E+00	0.000E+00
7	14.8	2.699	0.000E+00	0.000E+00
8	17.1	3.114	0.000E+00	0.000E+00
9	19.4	3.530	0.000E+00	0.000E+00
10	21.7	3.945	0.000E+00	0.000E+00

0.80	100.00
1.00	100.00

DATE - FEBRUARY 3, 1999
FROM FILE - C:\RRA\TFLAW62c.XLS

INPUT = 16.1 OUTPUT = 20 PVRUF VESSEL WITH SINGLE V WELD BY SUBMMERGED ARC PROCESS; CLAD BY SUB
UNIFORM THICKNESS WELD DATA ON FILE C:\RRA\WELD.20 AND TABLE.20A
X-RAY BEFORE CLADDING NO PT OF CLAD SURFACE

CLAD LAYER THICKNESS	5.50	MM
TOTAL CLAD WIDTH	52.08	MM
# CLAD LAYERS	2.0	
# WELD RUNS	14.0	
VOL OF CLAD	2.8644E-04	M^3
TOTAL LENGTH OF BEAD	14.00	M

TOTAL WALL INCLUDING CLAD (MM) = 2.2838E+02

N	MEAN DEPTH MM	MEAN DEPTH % BEAD	SURF_I	SURF-I FLAWS/METER DEPTH > A	CLAD	CLAD FLAWS/METER DEPTH > A	CLAD FLAWS/M^3 DEPTH > A
1	1.1	0.2076	3.6000E-04	3.8400E-03	3.3400E-03	2.7980E-02	9.7681E+01
2	3.4	0.6229	3.4000E-03	3.4800E-03	2.3920E-02	2.4640E-02	8.6021E+01
3	5.7	1.0381	8.0000E-05	8.0000E-05	6.4000E-04	7.2000E-04	2.5136E+00
4	8.0	1.4533	0.0000E+00	0.0000E+00	8.0000E-05	8.0000E-05	2.7929E-01
5	10.3	1.8686	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
6	12.6	2.2838	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
7	14.8	2.6990	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
8	17.1	3.1143	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
9	19.4	3.5295	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
10	21.7	3.9447	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
11	24.0	4.3600	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
12	26.3	4.7752	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
13	28.5	5.1905	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
14	30.8	5.6057	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
15	33.1	6.0209	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
16	35.4	6.4362	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
17	37.7	6.8514	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
18	40.0	7.2666	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
19	42.3	7.6819	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
20	44.5	8.0971	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
21	46.8	8.5123	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
22	49.1	8.9276	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
23	51.4	9.3428	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
24	53.7	9.7581	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
25	56.0	10.1733	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
26	58.2	10.5885	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
27	60.5	11.0038	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
28	62.8	11.4190	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
29	65.1	11.8342	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
30	67.4	12.2495	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
31	69.7	12.6647	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
32	71.9	13.0799	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
33	74.2	13.4952	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
34	76.5	13.9104	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
35	78.8	14.3257	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

36	81.1	14.7409	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
37	83.4	15.1561	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
38	85.6	15.5714	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
39	87.9	15.9866	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
40	90.2	16.4018	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
41	92.5	16.8171	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
42	94.8	17.2323	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
43	97.1	17.6475	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
44	99.3	18.0628	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
45	101.6	18.4780	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
46	103.9	18.8933	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
47	106.2	19.3085	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
48	108.5	19.7237	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
49	110.8	20.1390	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
50	113.0	20.5542	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
51	115.3	20.9694	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
52	117.6	21.3847	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
53	119.9	21.7999	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
54	122.2	22.2151	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
55	124.5	22.6304	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
56	126.8	23.0456	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
57	129.0	23.4609	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
58	131.3	23.8761	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
59	133.6	24.2913	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
60	135.9	24.7066	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
61	138.2	25.1218	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
62	140.5	25.5370	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
63	142.7	25.9523	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
64	145.0	26.3675	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
65	147.3	26.7827	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
66	149.6	27.1980	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
67	151.9	27.6132	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
68	154.2	28.0285	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
69	156.4	28.4437	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
70	158.7	28.8589	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
71	161.0	29.2742	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
72	163.3	29.6894	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
73	165.6	30.1046	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
74	167.9	30.5199	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
75	170.1	30.9351	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
76	172.4	31.3503	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
77	174.7	31.7656	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
78	177.0	32.1808	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
79	179.3	32.5961	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
80	181.6	33.0113	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
81	183.8	33.4265	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
82	186.1	33.8418	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
83	188.4	34.2570	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
84	190.7	34.6722	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
85	193.0	35.0875	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
86	195.3	35.5027	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
87	197.5	35.9179	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
88	199.8	36.3332	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
89	202.1	36.7484	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
90	204.4	37.1637	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
91	206.7	37.5789	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
92	209.0	37.9941	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
93	211.3	38.4094	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
94	213.5	38.8246	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

95	215.8	39.2398	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
96	218.1	39.6551	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
97	220.4	40.0703	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
98	222.7	40.4855	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
99	225.0	40.9008	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
100	227.2	41.3160	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00

IMERGED ARC PROCESS

CLAD FLAWS M OF BEAD DEPTH > A	NO PT SURF-I FLAWS M OF BEAD DEPTH > A	WITH PT SURF-I FLAWS M OF BEAD DEPTH > A
1.9986E-03	2.7429E-04	5.4857E-06
1.7600E-03	2.4857E-04	4.9714E-06
5.1429E-05	5.7143E-06	1.1429E-07
5.7143E-06	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00
0.0000E+00	0.0000E+00	0.0000E+00
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0.0000E+00	0.0000E+00	0.0000E+00

Short Term Uncertainty Analysis

Estimation of Failure Probability of As-Found Cavity

1. Develop CDF for flaw depth from data (NRC Complete).
2. Develop curve fit for flaw depth CDF (ORNL TBD).
3. Develop pressure and uncertainty as a function of flaw depth for collapse model
    a. Develop Uncertainty Distribution as a function of a/t (ORNL TBD).
    b. Develop and utilize 2L = 2.0" curve for analysis (ORNL Complete).
    c. Develop curve fit relating pressure to a/t from previous FEM results.(ORNL TBD).
4. Develop pressure and uncertainty curve as a function of flaw depth for J_{Ic} model.
    a. Gather J_{Ic} data to use (NRC Complete).
    b. Determine J_{Ic} at 600F and curve fit distribution (ORNL TBD).
    c. Develop and utilize 2L = 2.0" curve for analysis (ORNL Complete).
    d. Develop best estimate curve fit as a function of a/t from previous FEM results. (ORNL TDB).
    e. Develop uncertainty distribution as a function of a/t.
5. Create Monte Carlo Program (ORNL TBD).
    a. Pick a/t from CDF using random number generator.
    b. Determine median failure pressure for collapse and J_{Ic} models.
    c. Use random number generator to sample collapse and J_{Ic} model uncertainty distributions for chosen a/t.
    d. Add J_{Ic} and collapse model uncertainties to respective pressures.
    e. Repeat analysis 50,000? times.
    f. Plot collapse and J_{Ic} models CDF functions.

JIC Distribution Values.

Specimen ID	Test Temp (C)	Jic kJ/m^2	Reference	Remarks
A15D	288	78	NUREG/CR-5511	Three-Wire Cladding Study
A13C	288	68	NUREG/CR-5511	Three-Wire Cladding Study
H1	288	79	NUREG/CR-5511	Three-Wire Cladding Study
H10	288	85	NUREG/CR-6363	Aged 3-wire cladding @ 288C for 1605 hours
AA04	288	93	NUREG/CR-6363	Aged 3-wire cladding @ 288C for 1605 hours
AA02	288	59	NUREG/CR-6363	Aged 3-wire cladding @ 288C for 1605 hours
AA13	288	91	NUREG/CR-6363	Aged 3-wire cladding @ 288C for 20,000 hours
AA15	288	77	NUREG/CR-6363	Aged 3-wire cladding @ 288C for 20,000 hours
H15	288	111	NUREG/CR-6363	Aged 3-wire cladding @ 343C for 20,000 hours
H16	288	110	NUREG/CR-6363	Aged 3-wire cladding @ 343C for 20,000 hours

Convert to equivalent values at 314C using Jic vs. temperature relationship used in earlier work.
The delta ferrite content of material is below 10% which should preclude thermal aging effects based on earlier ANL work.